AECOM Environment

Prepared for:
Milwaukee County

Prepared by:
AECOM
Sheboygan, WI
60159452
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Excerpts from Draft 1

Environmental Assessment for Estabrook Dam

Milwaukee County, Wisconsin

Prepared by:

AECOM
4135 Technology Parkway
Sheboygan, WI 53083

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Environmental Assessment Criteria

1.0 Introduction to Estabrook Dam Environmental Assessment

Milwaukee County, Wisconsin owns and operates Estabrook Dam in the Milwaukee River near Estabrook Drive and W. Hampton Avenue (Attachment 1). The Wisconsin Department of Natural Resources (WDNR) has issued an Administrative Order dated July 28, 2009, requiring the County to drawdown the impoundment until such time as the dam can be either repaired or abandoned.

The dam was built in the 1930's and includes construction on an island in the river. This island is under the jurisdiction of the United States Bureau of Land Management.

An Environmental Assessment Report for Estabrook Dam will address alternatives to solicit public input and to determine the most cost-effective and environmentally sound solution.

The federal and state agency review of the project requires an environmental assessment to meet the National Environmental Policy Act (NEPA) and Wisconsin Environmental Policy Act (WEPA).

1.1 Project Background

Estabrook Dam was constructed during the 1930's by the Civilian Conservation Corps (CCC) and Civil Works Administration (CWA). The dam was constructed with gates that could be opened during times of flooding and closed during low water in order to maintain a pool of water above the dam for boating, bathing and fishing. The gated section of the dam extends from County owned parkland on the east bank of the river to a central island under the jurisdiction of the United States Bureau of Land Management. A fixed crest spillway then extends from the island to private lands on the west shore of the river. On May 26, 1937, Milwaukee County received a permit from the Public Service Commission of Wisconsin to construct, operate and maintain the dam with a fixed pool.

Historical information on the area indicates the Milwaukee River was prone to flooding in the area from the south end of Estabrook Park and extending beyond Silver Spring Drive for several miles. The cause of the flooding was attributed to a limestone outcrop or ledge which was north of Capital Drive and the outcrop was about one mile long. The river flowed over this outcrop. Downstream of the outcrop was a substantial drop in the river level. The residents upstream from the outcrop requested the local governments to provide relief from the flooding.

In the fall of 1933, removal of the rock outcrop was initiated for the purpose to reduce flooding of the river. Residents in the area wanted to continue to use the river for swimming, boating, and canoeing. It therefore was necessary to maintain the normal river level during stages of ordinary flow. Removal of the rock outcrop caused the water to drop to such an extent that most of the past recreational use was limited, and construction of a dam was necessary to maintain water levels similar to the previous levels.

The dam was constructed with gates to allow the gates to be open during flood events. The fixed crest section was designed to allow ice to pass over this section. A series of ice breakers were constructed to provide protection of the gates.

The WDNR Administrative Order dated July 28, 2009, requires the County to either repair or abandon the dam and also requires the County to maintain the dam under a drawdown condition until the repairs are completed. The repairs pertain to structural improvements and reconditioning of the gates to maintain proper operation. Some tree removal near the dam structure is also required.

Milwaukee County retained AECOM to investigate the dam condition in 2010, to assess sediment quality and quantity upstream of the dam, and to design improvements to the dam to meet the WDNR's Administrative Order.

Milwaukee Riverkeeper has sued Milwaukee County and claims Estabrook Dam is a public nuisance. On May 24, 2012, the State of Wisconsin Circuit Court declared that Estabrook Dam is a public nuisance and ordered Milwaukee County to remedy the nuisance. Milwaukee County is proceeding with the Environmental Assessment to address Estabrook Dam and alternatives with the objective to provide the public with the most environmentally sound and cost-effective solution.

The United States Environmental Protection Agency (USEPA), WDNR and Milwaukee County have investigated the sediments upstream of Estabrook Dam. Contaminated sediment containing PCBs was removed from the reaches of the river further upstream of the dam and extending to where the first phase ended and additional sediment is scheduled to be removed during the second half of 2014.

AECOM found sediment containing PCBs upstream from the dam. This information was shared with the USEPA, WDNR and Milwaukee County and these sediments will be part of the river sediment cleanup program for 2014.

Improvements to Estabrook Dam were designed by AECOM and plans and specifications for these improvements are on file at Milwaukee County.

A series of Technical Advisory Team meetings have taken place with representatives from Milwaukee County, Southeastern Wisconsin Regional Planning Commission, US Bureau of Land Management, WDNR, US Fish and Wildlife, Himalayan Consultants, and AECOM participating from 2012 to the present. The representatives provided input on Estabrook Dam and alternatives to the dam. The alternatives included a no-action alternative; repair the dam; repair the dam and provide fish passage; removal of the dam, and a rock ramp to develop a pool upstream similar to a dam while allowing fish passage.

An environmental assessment is required to evaluate feasible alternatives to the dam and to meet the state and federal regulatory requirements for a WEPA and NEPA project.

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2.0 Identification of Alternatives

This section provides an overview of the alternatives considered regarding Estabrook Dam. The alternatives are identified, a preliminary screening of alternatives is performed, and the most feasible alternatives are selected for a more in-depth evaluation of their environmental benefits, impacts, and related costs. Public input and agency input will be solicited to provide Milwaukee County with the information to select the preferred alternative.

2.1 Identification of Alternatives

The Technical Advisory team identified the following alternatives for consideration for Estabrook Dam. These alternatives are as follows:

- Alternative 1 – Rehabilitate the dam.
- Alternative 1A – Rehabilitate the dam and add provisions for fish passage.
- Alternative 2 – Abandon and remove the dam.
- Alternative 3 – Abandon and remove the dam, providing a rock ramp to facilitate fish passage and establish an impoundment.
- Alternative 4 – Gated spillway removed, serpentine overflow spillway lowered, and a 6.3-foot-high rock ramp constructed.
- Alternative 5 – No action.
- Alternative 6 – New dam.

2.2 Preliminary Screening of Alternatives

Because Estabrook Dam was constructed in the 1930s, Milwaukee County and the public have decades of experience to weigh the costs and environmental impacts, both positive and negative, associated with the dam. The dam gates have remained open since 2009, which allows Milwaukee County and the public the opportunity to assess environmental conditions as a free flowing river and no dam. These factors allow all parties to objectively evaluate the environmental and social aspects of a dam or a free flowing river.

The following information is provided on each alternative and the preliminary screening of the alternatives.

2.2.1 Alternative 1 – Rehabilitate the Dam

Alternative 1 – Rehabilitate the dam consists of making the structural improvements to the dam to extend its life and to meet the requirements stipulated in the July 28, 2009 WDNR Administrative Order. Other improvements include upgrading the gates and tree removal at the dam structure.

Milwaukee County Board has voted to implement Alternative 1. At that time, the concept of addressing other alternatives to the dam had not been presented. The NEPA and WEPA requirements include addressing alternatives.

2.2.2 Alternative 1A – Rehabilitate the Dam and Add Provisions for Fish Passage

Alternative 1A is Alternative 1 with the addition of fish passage features. The provision for fish passage can be considered an environmental benefit. Because of this added environmental benefit of fish passage, the environmental assessment will eliminate Alternative 1 from further consideration and will evaluate Alternative 1A.

Alternative 1A is a refinement of Alternative 1 with added environmental benefits. The fish passage provision allows fish to pass through the dam area in a designated passage section of the dam. This fish passage allows fish to migrate during spawning and other periods of the year which promotes fish diversity, enhances fishing opportunities and is intended to replicate conditions in a free flowing river.

Alternatives 1 and 1A will require long-term annual operation and maintenance cost to operate the gates, remove debris, and to maintain the dam.

2.2.3 Alternative 2 – Abandon and Remove the Dam

Alternative 2 – Abandon and remove the dam would restore the river to a free flowing condition. This alternative would eliminate the County's capital cost for dam repair and also eliminate the need for annual dam operation and maintenance costs. Sediment would not accumulate if the dam was removed and this is another environmental benefit. Removing the dam would eliminate the pool behind the dam which some upstream property owners desire from a recreational and aesthetic standpoint. This alternative has merit and will be further addressed in the environmental assessment.

2.2.4 Alternative 3 – Abandon and Remove Dam, Providing a Rock Ramp to Facilitate Fish Passage and Establish an Impoundment

Alternative 3 provides the benefits of an impoundment 1,600 feet upstream of the dam site. The ramp would create an impoundment similar to a dam, but without the large capital expense to repair the dam and eliminates the annual operating and maintenance costs associated with the dam gates. But some maintenance, including debris cleaning, is anticipated. The rock ramp allows fish passage, which is an environmental benefit. The passive nature of a rock ramp is similar to a natural river with riffles. Sediment buildup can be expected with a rock ramp, depending on the rock height. Similarly, the rock ramp height will dictate the extent of a pool upstream and will be limited to a height that does not interfere with a 100-year frequency flood elevation. Alternative 3 has merit and will be further addressed in the environmental assessment.

2.2.5 Alternative 4 – Gated Spillway Removed, Serpentine Overflow Spillway Lowered, and a 6.3-foot-high Rock Ramp Constructed

Alternative 4 presents a rock ramp option located at the gated section of the dam. This rock ramp is higher than the rock ramp option in Alternative 3 and therefore provides a deeper impoundment upstream. The rock ramp height results in the structure being considered as a large dam which has some regulatory requirements as follows:

- Operation inspection and maintenance plan must be developed.
- Emergency action plan must be developed.
- An owner inspection would be required every 10 years.

Alternative 4 has merit and will be further addressed in the environmental assessment.

2.2.6 Alternative 5 – No Action

Alternative 5 – No action refers to Milwaukee County taking no action to repair the dam or to abandon the dam. The No Action alternative would violate WDNR's July 28, 2009 Administrative Order. Alternative 5 would mean the dam gates could not be operated. The dam is in need of structural repair which could lead to continued degradation of the dam. The potential for an impoundment upstream could not be realized under this alternative. Therefore, Alternative 5 – No Action, is eliminated from further consideration because it violates WDNR's Administrative Order and is not a sustainable solution.

2.2.7 Alternative 6 – New Dam

Alternative 6 – New Dam would replace the existing dam. The existing dam, built in the 1930s, is in need of repair, but the costs to construct a new dam would be substantially higher. The dam can be repaired at a much lower cost. For this reason, Alternative 6 is eliminated from further consideration.

2.3 Feasible Alternatives

Based on the preliminary screening of alternatives, the following alternatives are deemed feasible and will be further evaluated in this environmental assessment.

- Alternative 1A – Rehabilitate the dam and add provisions for fish passage.
- Alternative 2 – Abandon and remove the dam.
- Alternative 3 – Abandon and remove the dam, providing a rock ramp upstream of the dam site to facilitate fish passage and establish an impoundment.
- Alternative 4 – Gated spillway removed, serpentine overflow spillway lowered, and a 6.3-foot-high rock ramp constructed.